AMENDMENTS TO THE CLAIMS:

Please amend claim 19, and add new claim 21, as indicated below. This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1.-10. (Cancelled)

11. (Previously Presented) A method of determining characteristic spin parameters of a spun optical fiber, comprising:

performing optical time-domain reflectometry measurements on the fiber, so as to obtain a state of polarization (SOP) spatial function from a backscattered electromagnetic field, said SOP spatial function being defined by a plurality of components; and

processing the SOP spatial function by:

calculating a further spatial function related to the spatial first derivative of at least one of said components of the SOP spatial function;

identifying a spatial periodicity of said further spatial function; and

determining said characteristic spin parameters as a function of said spatial periodicity.

12. (Previously Presented) The method according to claim 11, in which said characteristic spin parameters comprise at least one of a spin inversion period and a spin period.

13. (Previously Presented) The method according to claim 12, in which said further spatial function is a birefringence modulus.

14. (Previously Presented) The method according to claim 13, in which said determining the characteristic spin parameters comprises locating peaks in the birefringence modulus, and determining the spin inversion period based on a distance between the peaks.

15. (Previously Presented) The method according to claim 13, further comprising:

calculating a spectrum of the birefringence modulus;

analyzing the calculated spectrum to locate at least one spike; and

determining the spin inversion period based on spatial frequency of the spike.

16. (Previously Presented) The method according to claim 15, in which said spectrum is calculated in correspondence of a measurement window of optical fiber length of prescribed width, the method further comprising:

causing the measurement window to shift along the fiber.

17. (Previously Presented) The method according to claim 11, in which said performing optical time-domain reflectometry measurements on the fiber and calculating a further spatial function related to the spatial first derivative of at least one of said components of the SOP spatial function is repeated at least once after changing the fiber conditions.

18. (Previously Presented) The method according to claim 16, in which said changing the fiber conditions comprises one or more among changing a fiber end at which the optical time domain reflectometry measurements are performed, vibrating the fiber, causing the fiber temperature to vary, waiting a time before repeating the measurements.

19. (Currently Amended) An apparatus for determining characteristic spin parameters of a spun optical fiber, comprising:

a source of electromagnetic radiation optically coupled to the fiber;

a POTDR measurement apparatus optically coupled to the fiber to obtain a state of polarization (SOP) spatial function from a backscattered electromagnetic field, said SOP spatial function being defined by a plurality of components; and

a data processor for processing the SOP spatial function,

wherein the data processor ~~is adapted to~~ provides in output:

~~calculate~~ a further spatial function related to the spatial first derivative of at least one of said components of the SOP spatial function;

~~identify~~ a spatial periodicity of said further spatial function; and

~~determine~~ said characteristic spin parameters as a function of said spatial periodicity.

20. (Previously Presented) The apparatus according to claim 19, in which said further spatial function is a birefringence modulus.

21. (New) An apparatus for determining characteristic spin parameters of a spun optical fiber, comprising:

a source of electromagnetic radiation optically coupled to the fiber;

a POTDR measurement apparatus optically coupled to the fiber to obtain a State Of Polarization (SOP) spatial function from a backscattered electromagnetic field, said SOP spatial function being defined by a plurality of components; and

a data processor for processing the SOP spatial function,

wherein the data processor comprises:

a calculator data processing module calculating a further spatial function related to the spatial first derivative of at least one of said components of the SOP spatial function;

an identifier data processing module identifying a spatial periodicity of said further spatial function; and

a characteristic spin parameters determination data processing module determining said characteristic spin parameters as a function of said spatial periodicity.